INFECTIONS OF THE LIVER WITH SPECIAL REFERENCE TO AMEBIASIS*

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TWO important changes in our basic philosophy concerning amebic infection of the liver are responsible for the recent marked lowering of mortality and morbidity in this condition as noted in many reports of considerable series of cases now appearing in the literature:

1. Recognition that amebic hepatitis and amebic hepatic abscess constitute a special kind of liver necrosis[1] produced by the invasion of a micro-organism, the endameba histolytica, for which there is a specific remedy, emetine. The situation is comparable to the development of a gumma in the liver caused by the spirochaeta pallida against which the arsenicals and bismuth are specific.

2. Repeated demonstration that where, because of pyogenic infection complicating amebichepatic abscess, open drainage of such abscess is required, it is absolutely imperative that such drainage be performed in a manner to avoid contamination of pleural or peritoneal cavities.

Renewed emphasis falls upon amebiasis at this time because of military operations conducted throughout the world, but particularly with reference to tropical contacts. That amebiasis is not a tropical disease but is widely prevalent in this country has long been recognized by gastro-enterologists. Craig[2] estimated that from five to ten per cent of our population harbor the ameba in the intestinal tract, while Faust[3] places this incidence at about twenty per cent. It is believed that four to five per cent of those so infected will present hepatic complications. Thus, if Faust's figure of twenty per cent infestation for our population is accepted, some twenty-five million instances of amebiasis may be said to be present in this country with the probability that something over a million of them will develop amebic hepatitis or amebic hepatic abscess. Should there be any increased infection rate on the general population as the result of the importation of ameba from our military contacts, these figures would naturally have to be revived upward.

PATHOLOGY

Etiology.—All authors stress the predominance of males to the extent of 90-95 per cent in amebic hepatic involvement, and the ages most commonly affected as the second to the fifth decade. Probably all instances are preceded by involvement of the colon, but such involvement may antedate the development of liver complications by a few days, months or even years, and such colonic involvement may be entirely asymptomatic in as high as 50 per cent of the cases.

Pathogenesis and Pathology.—The ameba may invade the liver by (1) direct extension through the bowel wall and peritoneal cavity; (2) through the lymphatics; (3) through the portal vein, the last route being by far the most common. Intrahepatic portal thrombosis occurs directly as the result of amebic action; the ameba also have a direct cytolytic activity on the liver parenchyma. The process may be arrested at this early stage either by treatment or spontaneously in certain instances, or it may progress to the formation of true abscess in which there is a central area of colliquative necrosis surrounded by a thick fibrous capsule. The uncomplicated amebic abscess is sterile, and upon this important fact is based our rationale of treatment.

Abscesses are usually single, occur most often in the right lobe and usually in the dome of the right lobe. However, multiple abscesses may occur and infrequently abscesses are present in the left lobe of the liver. Associated pathological features consist of secondary infection of the abscess with pyogenic cocci and/or the colon bacillus; rupture of the abscess into the subphrenic space, the subhepatic space, pleural cavity, lungs, bronchus or general peritoneal cavity.

SYMPTOMS AND SIGNS

The symptoms and signs vary in intensity and degree depending upon whether the condition is acute, subacute or chronic in its onset. Typically, there are low grade intermittent or remittent fever, pain in the right upper abdominal quadrant, sometimes referred to the right shoulder, chills, and in the severe instances with complicated abscesses, drenching sweats. There may be a subicteric tint to the skin. The abdominal findings consist of rather well defined tenderness over the right upper quadrant, together with some degree of enlargement of the liver. Infrequently an abscess may be felt pointing below the right costal margin. In the instances where the abscess is in the posterior portion of the liver on the right side there is tenderness over the eleventh and twelfth intercostal spaces and the right costo-vertebral angle.

Laboratory Findings.—In the uncomplicated hepatitis or amebic abscess, there is a moderate leucocytosis without a concomitant increase in the polymorphonuclear leucocytes. Typical counts vary from thirteen to sixteen thousand white blood cells per cubic millimeter with polymorphonuclears between 70 and 75 per cent. The finding of the ameba histolytica in the stool in such a patient is practically diagnostic, but the percentage of positive findings varies over so wide a range in proved cases of amebic hepatic involvement that negative stool findings are not to be considered too seriously. Fluoroscopic and x-ray examinations are particularly important in diagnosis. The right sheath of the diaphragm is elevated and fixed and there is usually obliteration of the anterior costophrenic and cardiophrenic angles.

DIAGNOSIS

Diagnosis is based upon a careful history involving the onset, related intestinal disturbances, physical signs as above described, together with corroborative x-ray and other laboratory findings. Inasmuch as the treatment depends very fundamentally upon the nature of the condition of the liver, whether it be hepatitis, uncomplicated abscess or an abscess secondarily infected with pyogenic organisms, too great care cannot be exercised in establishing this point before treatment is instituted. Other conditions to be considered are: subphrenic and subhepatic abscess due to gastric or duodenal perforations; infections of the gallbladder, infections of the urinary tract, chronic pulmonary disease such as tuberculosis or lung abscess; brucellosis, septicopyemia from whatever cause; pylephlebitis with multiple pyogenic abscesses of the liver. In each of these conditions, appropriate history and confirmatory laboratory data are sought and evaluated.

TREATMENT

Practically all cases of amebic hepatitis and many instances of uncomplicated abscess will respond to emetine therapy alone. This drug is given as emetine hydrochloride intramuscularly or intravenously, one grain daily for a period of from six to ten days.

Should such a course of treatment not result in marked improvement, aspiration of the abscess is indicated. As stated previously, uncomplicated amebic abscesses are sterile and it is extremely important that no infection be introduced from without. Therefore, the

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technique of aspiration should be performed under strict aseptic conditions, preferably in an operating room where if the aspiration presents indication for it, further and more extensive drainage may be undertaken at once. Aspiration should be performed directly into an abscess that presents below the costal margin. If the abscess is not palpable, but has been localized by fluoroscopic and x-ray examinations, there are three usual sites of such locations and three methods of approach.

First, for an abscess located in the anterior portion of the liver, the needle is inserted below the anterior costal margin about 4-6 cms. lateral of the midline and is directed superiorly and posteriorly into the abscess cavity. A blunt needle such as a cerebral ventricle needle is used for the purpose. As much of the abscess contents as possible is aspirated and some of the substance examined immediately by microscope. The characteristic fluid obtained from an uncomplicated abscess is described as resembling anchovy or chocolate sauce in color. If there are many bacteria and pus cells present in the smear, these findings are indicative of secondary infection and may require open drainage. However, in such instances a course of sulfonamide and penicillin therapy should be given a thorough trial before open drainage is performed. Needless to say before each aspiration, the patient should receive emetine for a minimum of four days.

For abscesses located in the posterior portion of the liver, the exploring needle is inserted in the right lumbocostal angle and is directed superiorly and anteriorly to the abscess cavity.

For an abscess located near the dome of the liver, the needle is inserted through the ninth or tenth intercostal space in the anterior axillary line and directed superiorly.

The only dangers of aspiration are: 1. Spread of infection. 2. Hemorrhage. These dangers are minimized by careful technique. No irrigation of the abscess cavity is attempted nor is any antiseptic substance introduced into it.

In those abscesses complicated by pyogenic organisms which do not respond to sulfonamides and/or penicillin therapy, open drainage is essential. The chief cause of the high mortality formerly associated with open drainage was the infection introduced into the pleural or peritoneal cavity. To avoid this complication, open drainage is performed in such a way as to avoid these two serous cavities. The technique is the same as that employed for the extra-serous drainage of subphrenic or subhepatic abscesses. For such an abscess located anteriorly the Clairmont procedure is performed. This consists of a subcostal incision parallel to the costal margin cutting across the oblique muscles and the transversalis fascia and approaching the abscess extraperitoneally by mobilizing the parietal peritoneum from the lower surface of the diaphragm. For an abscess that is located posteriorly, the Ochsner approach utilizes this principle of avoiding the pleural and peritoneal cavities. The twelfth rib is resected subperiostially. An incision is made through the bed of the twelfth rib at a level of the spine of the first lumbar vertebra. The retroperitoneal tissue is dissected bluntly until the peritoneum is encountered which is then separated from the under surface of the diaphragm until the region of the abscess in the posterior portion of the liver is reached. Ochsner and De Bakey[4] in recent articles have emphasized the great reduction in mortality accomplished by this extraserous method of drainage as compared with methods formerly in use in which so often the pleural cavity and/or the peritoneal cavity was infected, with fatal results.

Following the successful treatment of amebic hepatitis or amebic abscess by emetine and/or emetine and aspiration therapy, the intestinal amebiasis should be treated by one of the amebicides such as carbarsone, chiniofon, vioform or diodoquin.

PROGNOSIS

According to Ochsner and De Bakey[5] the most important factors in prognosis are: "1. The multiplicity of lesions in the liver. 2. The presence or absence of complications. 3. The presence or absence of secondary infections. 4. The type of therapy employed."

These authors report a collected series of five thousand cases in which the mortality was 43.1 per cent in those treated with open drainage, and 5.6 per cent in those receiving closed drainage. In their series the mortality was 22.1 per cent for open drainage, and 3.6 per cent for closed drainage. These same authors in quoting a series of eighty-one cases show a mortality of 33.3 per cent for transpleural drainage, 30.4 per cent for transperitoneal drainage, 10.5 for incision and drainage where the abscess pointed superficially, and a mortality of 6.6 per cent where the drainage was extraserous, thus emphasizing all too well the much better result to be obtained when the peritoneal and pleural cavities are avoided.

Little need be said concerning the multiple pyogenic hepatic abscesses occurring as part of the process of septicopyemia or as a result of ascending pylephlebitis. These are hopeless conditions and the only treatment of any value would be prophylactic. The occasional solitary pyogenic abscess should be treated in the same way as an infected amebic abscess and drained extraserously.

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PORTAL CIRRHOSIS*

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CIRRHOSIS of the liver has presented many complex problems of clinical and pathological physiology for study recently. Because it was formerly considered a virtually hopeless condition, the standard therapeutic attitude in dealing with this disease was essentially one of defeatism. Only in recent times have investigators been able to show the enormous functional reserve of the liver and its phenomenal capacity for regeneration and repair. Furthermore studies on animals treated with hepatotoxic agents have demonstrated the possibility of recovery even after the clinical picture of human portal cirrhosis has been produced. Experimental studies also have demonstrated the relation of diet and nutrition to the structure and function of the liver.

THE NUTRITIONAL FACTOR IN CIRRHOSIS

To review the clinical and experimental evidence bearing on the point that cirrhosis of the liver is a deficiency

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